

Abstract

A system and method for identifying primary color chromaticity coordinates of a red, green and blue light sources includes a tristimulus filter the receives the combined light generated by the light sources. The light sources are preferably a group of red, green and blue light emitting diodes. A processor is configured to generate a plurality of test control signals that sets a desired intensity value for each of the red, green and blue LEDs. Based on these test control signals, the system is configured to measure three sets of chromaticity coordinates corresponding to the combined light generated by these red, green and blue LEDs. The processor thereafter calculates the color chromaticity coordinates of the LEDs, based on the measured coordinates of the combined light, and the intensity values of the LEDs, and the intensity values of the combined light. This calculation in accordance with one embodiment of the invention is accomplished by solving a matrix equation. Once the color coordinates of the individual light sources is uniquely calculated, the system measures the intensity values of light for each of the light sources that is necessary to provide a combined light with a desired color chromaticity coordinates. These intensity values can be used in a feedback control circuit to maintain the desired combined light as the LEDs change their characteristics from batch to batch or over time.